

The Intel Hex32 code used for Microchip hex files

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Microchip program hex files use the Intel Hex32 code specified by Intel Corporation many years ago for transferring files. The file is a standard ASCII file where each line ends with a carriage return (0x0d) followed by a line feed (0x0a).

Following is an example for a PIC18 hex file.

```
:0200000040000FA          // address 0000XXXX  
:020000000102FB          // address 00000000  
:00000001FF              // end of file
```

1. Each line begins with a colon.
2. The first two digit number is the number of data bytes on the line in hexadecimal. So a line with 16 bytes uses a 10. Data is always in pairs of two bytes using little endian format. ie. Low followed by high. In the example the 16-bit data stored at location 00000000 is 0201.
3. After the number of bytes of data is a 4-digit hexadecimal address. An address of 0A00 appears as 0A00.
4. Following the 4-digit address is a block mark of 00 for a normal line, 01 for the end of the file, and 04 for extended addressing. For example if the byte following the address is a 04, the two data bytes represent the most significant 16 bits of the address for the remainder of the file or until another 04 is encountered in the HEX file.
5. The last byte on the line is the sum of all of the bytes in 2's complement form and is called a checksum. In the example, the sum is 05 and the two's complement of 05 is FB.
6. Although they do not appear in the listing, each line is followed by 0D, 0A.